Contact Information:

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Office Hours:

T & Th: 10:00 - 11:30 AM, 1:00 – 2:00 PM
& by appointment

Course Description

It has always irked me that there are still so many people for whom the sky is no more than a mass of random points of light... It is quite possible for a layman in the field of astronomy like myself to enjoy recognizing all those noble, striking figures, which become all the more real as you get to know them better.

– M. C. Escher (1898 –1972)

A. O'Donoghue, Steven Goldman '13, J. Miller at the Arecibo Observatory, January 2013

People of every time and culture have studied the skies, named the arrangements of stars and used the apparent motions of the Sun and Moon to mark time. This course surveys the known contents of the Universe with the objective of giving students familiarity with them. The dynamic natures of celestial objects are also explored by study of their motions, interactions and evolutions. To foster appreciation for the methods of science, attention is given to western culture's slow path toward understanding the cosmos and our place within. Evening observing sessions offer the opportunity for actual observations with the unaided eye, binoculars and telescopes.

This course which satisfies the natural science distribution requirement (NSC); as such, there is no prerequisite or lab component for this course.

Course Objectives

The various fields of science are concerned with the pursuit of answers – or, at least, our best guess – to the many questions we have about the natural world around us. These questions are typically answered in a laboratory, where the subject in question can be examined and analyzed thoroughly. But how does an astronomer accomplish this task? Space travel has only been possible for the last 50 years, so our collection of "samples" is rather small compared to other fields. Optical telescopes have only been in use for the last 400 years. How did ancient sky observers determine the difference between stars, planets and other celestial objects? One of the goals of this Astronomy course is to give you an appreciation for the scientific analysis used to determine the nature of the sky above, and to realize that the Universe is comprehensible through science that can be understood by anyone.

But why study astronomy? We have to remember that we are part of the Universe, and thus can learn about our origins by studying the Universe. If we study the intimate connections between human life and the cosmos, we can achieve a greater appreciation for the unique and fragile nature of our planet and its life.

The various objects and motions observed in the sky should give rise to many questions, yet it is something that many take for granted. If you grew up in a large city, you may never have seen the sky in all its splendor. Have you ever wondered why you sometimes see the Moon during the day, or thought about why the Sun appears higher in the sky in the summer than winter? Do you want to know more about the constellations than just the location of the Big Dipper? And just what *was* that bright object you saw on the horizon last night? This course will supply the answers to these questions, and more.

Course Materials: Sakai vs. Angel

St. Lawrence has switched from *Angel*, our previous course management program, to the open-source program *Sakai* (log in at sakai.stlawu.edu). I will be using Sakai for the distribution of course content: assignments, projects, your grades and other course materials. All homework and quizzes will be taken on the accompanying textbook website, as noted below.

Required Text

The textbook for this course is *The Cosmic Perspective, 6th Ed.*, by Bennett, Donahue, Schneider and Voit. Included with your text is a CD containing *SkyGazer*, a planetarium program for your computer. Also included with new textbooks is a personal access kit for *MasteringAstronomy.com*, the textbook web site. HOMEWORK AND QUIZZES WILL BE ASSIGNED THROUGH THE MASTERING ASTRONOMY WEB SITE, SO ACCESS IS REQUIRED. If you purchased a used copy of the book, you can use a credit card to buy access online at MasteringAstronomy; the cost is about $50 ($85 with an eText version of the textbook; the eText is not required). The site also contains a tremendous amount of additional material to supplement the text, including chapter overviews, movies, and Flash-based tutorials and interactive figures. You'll find the website useful when studying for exams, and the material there is very cool!

We will also be using *Lecture-Tutorials for Introductory Astronomy, 2nd edition*, by Prather, Slater, Adams and Brissenden. This workbook contains exercises that you will work on in groups during class time. Lecture-Tutorial exercises will not be submitted for a grade; however, the questions are similar to some that you will find on the exams, so you are therefore strongly encouraged to consider these activities as a critical component to your success in this course. **BE SURE TO BRING THE LECTURE-TUTORIALS WORKBOOK WITH YOU TO EACH CLASS!**

Optional Equipment

Most of campus is (unfortunately) bright enough to be able to read star charts and write in an observing notebook, but if you pick up a small flashlight at the local Dollar store, I can give you some red plastic to make an observers flashlight. There are also many apps that will turn your smartphone into a red flashlight. A red flashlight will allow you to read a star chart and write in your observing journal while preserving your night-vision when you are in a sufficiently dark place. Then you'll feel like a real astronomer!

Attendance Policy

Attendance is required and will be taken each class. It is hoped that you will not find class to be burdensome, and that the lectures and exercises we will work on will help reinforce the material we are studying. Taking attendance will also help me to learn your names more quickly.

Course Conduct

You should come to class ready to work every day. Please be respectful to your fellow students and me by turning off your cell phone before coming to class. If you have an urgent need to keep your phone turned on (e.g. you work for campus EMS), please set your phone to vibrate, and let me know that you may be receiving a call. Be sure to visit the restroom before class begins (you may speak to me in private if you have medical issues); if you can sit through *The Dark Knight Rises* for 2 hours 45 minutes while drinking a large soda and eating a jumbo popcorn, you should have no problem making it through 1½ hours of this course. Also, if you need to leave class early, or will be arriving late, please have the courtesy to inform me ahead of time.

Grading

Exams: Three exams during the semester (Thursday, February 14; Thursday, March 7; & Thursday, April 11), and **a cumulative final exam scheduled for Thursday, May 9, at 1:30 pm**. DO NOT ASK TO TAKE ANY EXAM EARLY BECAUSE "YOUR RIDE IS LEAVING"!

Quizzes: Weekly quizzes on the MasteringAstronomy website (except during an exam week). The lowest quiz grade will be dropped.

Homework: Weekly homework on the MasteringAstronomy website. Since the majority of homework assignments will be submitted electronically, LATE HOMEWORK WILL NOT BE ACCEPTED!

Projects: There will be two observing projects this semester: An observing journal with a weekly target constellation (semester long), and Moon observing (2 weeks). Details about these projects will be provided in the coming weeks. In addition, we will also work on some smaller-scale projects during class time. If you miss a class, it is your responsibility to make arrangements to complete the project. Solutions for all projects will appear on Sakai; therefore, LATE PROJECTS WILL NOT BE ACCEPTED.

Grading breakdown:

Homework	10%
Quizzes	10%
Observing Journal	20%
Other Projects	10%
Exams	30%
Final Exam	20%
Total	*100%*

Grade equivalent:

Average:	<60	60	63	65	67	70	73	76	79	82	85	88	91	≥94
Grade:	0.0	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0

Academic Integrity

St. Lawrence University's Code of Academic Honor states, *"All students at St. Lawrence University are bound by honor to maintain the highest level of academic integrity. By virtue of membership in the St. Lawrence community, every student accepts the responsibility to know the rules of academic honesty, to abide by them at all times and to encourage all others to do the same"*. Violations of the code are administered under the Constitution of the Academic Honor Council.

Tentative Schedule

Updates to the schedule will be given in class and Sakai as needed. In addition to the events listed, there will be several evening observing sessions held throughout the semester – as long as the weather cooperates! We will be observing with the unaided eye, binoculars and telescopes. Dates, times and location of observing sessions will be announced in class.

Tuesday		*Thursday*	
Jan 22	First Day: Ch. 1 "Our Place in the Universe"	Jan 24	Ch. 1 (*continued*)
Jan 29	Ch. 2 "Discovering the Universe for Yourself"	Jan 31	Ch. 2 (*continued*)
Feb 05	Ch. 2 (*continued*)	Feb 07	Ch. S1 "Celestial Timekeeping & Navigation"
Feb 12	Ch. S1 (*continued*)	Feb 14	Exam #1
Feb 19	Ch. 3 "The Science of Astronomy"	Feb 21	Ch. 3 (*continued*) • Observing Journal – 1st turn in
Feb 26	Ch. 5 "Light and Matter"	Feb 28	Planetarium Visit (SUNY Potsdam)
Mar 05	Ch. 5 (*continued*)	Mar 07	Exam #2
Mar 12	*Spring Break – no class!*	Mar 14	*Spring Break – no class!*
Mar 19	Ch. 7 "Our Planetary System"	Mar 21	Ch. 7 (*continued*)
Mar 26	Ch. 14 "Our Star"	Mar 28	Ch. 14 (*continued*) • Observing Journal – 2nd turn in
Apr 02	Ch. 15 "Surveying the Stars"	Apr 04	Ch. 15 (*continued*)
Apr 09	Ch. 15 (*continued*)	Apr 11	Exam #3
Apr 16	Ch. 16 "Star Birth"	Apr 18	Ch. 17 "Star Stuff"
Apr 23	Ch. 18 "The Bizarre Stellar Graveyard"	Apr 25	Ch. 18 (*continued*) • Observing Journal Due
Apr 30	Ch. 20 "Galaxies and the Foundation of Modern Cosmology"	May 02	Last Day: *Exoplanets & Aliens: Is There Life in the Universe?*

Final Exam: Thursday, May 9, 1:30 PM, BH232